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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/459,598	12/14/1999	SHARON LEVY	162/01172	1376

7590 06/04/2003

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EXAMINER

CHAUDRY, MUJTABA M

ART UNIT	PAPER NUMBER
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2133

DATE MAILED: 06/04/2003

12

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/459,598

Applicant(s)

LEVY, SHARON

Examiner

Mujtaba K Chaudry

Art Unit

2133

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 05 May 2003.
- 2a) ☒ This action is FINAL. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1, 3-9, 11, 13-19, 21-27, 29-31, 33 and 43-49 is/are pending in the application.
- 4a) Of the above claim(s) 2, 10, 12, 20, 28, 32 and 34-42 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1, 3-9, 11, 13-19, 21-27, 29-31, 33 and 43-49 is/are rejected.
- 7) ☐ Claim(s) 1, 23 and 43 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☒ The proposed drawing correction filed on 05 May 2003 is: a) ☒ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Drawings

The corrected or substitute drawings were received on May 5, 2003. These drawings are accepted.

Specification

The corrected or substitute specification were received on May 5, 2003. The specification is accepted.

Allowable Subject Matter

Claims 43-49 would be allowable if rewritten or amended to overcome the objections and rejection(s) under 35 U.S.C. 112, second paragraph, set forth in this Office action.

Claim Objections

Claims 1 and 23 are objected to because of the following informalities:

- The preambles in the claims read as, "A method comprising:..." There is insufficient information in the preamble of the claim. It does not state what the method is for. The Examiner would like to point out this problem is introduced by the Applicant's amendment.

Claim 43 is objected to because of the following informalities:

Art Unit: 2133

- The preamble in the claim reads as, "A apparatus comprising:..." There is insufficient information in the preamble of the claim. It does not state what the apparatus is for. The Examiner would like to point out this problem is introduced by the Applicant's amendment.

Appropriate correction is required.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter, which the applicant regards as his invention.

Claim 43 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The claim recites language "long term storage area" and "short term storage area" which are deemed to relative terms and therefore indefinite. As a suggestion, it is recommended using terminology such as "volatile" and "non-volatile" if Applicant feels it's applicable. Dependent claims 44-49 dependent directly/indirectly form independent claim 43 and inherently include indefinite language as stated above, and therefore are rejected as well.

Response to Amendment

Applicant's arguments/amendments with respect to amended claims 1, 3-9, 11, 15-19, 21-27, 29-31, 33 and 43-49 and original claims 13-14 filed May 5, 2003 have been fully considered. As a note of reference claims 2, 10, 12, 20, 28, 32 and 34-42 have been cancelled (see paper No. 10). The Examiner would like to point out that this action is made final. (See MPEP 706.07a).

Art Unit: 2133

Applicant contends, “neither Lerzar nor Viterbi...teach or suggest *recalculating at least some of the state metric vectors based on the stored reference vector.*” The Examiner disagrees. Lerzar teaches (Figure 2) delay elements 32 and 34 as well as storage elements 36 and 38. These elements are used to buffer and control the presentation of metric values to the LRC units 28 and 30, by timing and control unit 40. Furthermore, Lerzar teaches in Figure 3, an index, k , which is used as a reference in the decoding process that is initialized at step 54. This index may, for example, correspond to time steps, which are chosen based on the symbol rate and/or sampling rate. The FSMC unit 24 and the RSMC 26 are initialized with initial FSMs and RSMs, respectively, stored at step 52. At step 56, the index k is incremented and the decoding process begins. The decoding process operates as a loop wherein the forward state metrics and reverse state metrics are calculated in parallel, thus reducing the decoding delay. The processing methodology varies slightly depending upon whether the number of symbols N in the received sequence is even or odd. In the first part of the loop, i.e., including steps 56-62, a portion of the branch transition metrics, the forward state metrics and the reverse state metrics for the received sequence are calculated and stored. Specifically, from step $k=1$ up to step $k=N/2$ (if N is even) or $k=N/2-1/2$ (if N is odd), the BTMs with index k and $N-k+1$ (step 58), the FSMs with index k (step 60) and the RSMs with index $N-k$ are calculated (step 60). The FSMs and RSMs are stored in units 36 and 38, respectively. At this point, as determined in decision block 62, the decoding process has sufficient metric data to begin calculating the likelihood ratios while the remaining metrics are being calculated so the process is expanded to include likelihood ratio calculation. Whereas if there are an odd number of symbols N in the received sequence, then only one likelihood ratio is calculated during the first iteration of the expanded loop. Thus, at step 64, if

Art Unit: 2133

$k=N/2+1/2$ (i.e., which will be true only if N is odd) the process flow proceeds to step 66 where the LR with index $N/2+1/2$ is calculated. The flow then loops back to step 56 to increment the index k , calculate and store a new set of metrics and then calculate additional likelihood ratios. If, on the other hand, N is even or after the first iteration when N is odd, the flow proceeds from block 64 to block 68 wherein two likelihood ratios are calculated for each pass through the loop. Specifically, from step $k=N/2+1$ (if N is even) or $k=N/2+3/2$ (if N is odd) up to step $k=N$, the BTMs with index k and $N-k+1$, the FSMs with index k , the RSMs with index $N-k$ and the LRs with index k and $N-k+1$ are calculated and stored. When the decoder has reached step $k=N$, the process follows the "NO" branch out from decision block 70. Then, the decoded sequence can be output from the decoder at step 72.

Applicant contends, "Lerzar nor Viterbi...teach or suggest at least *calculating the state metric vectors from a block of symbols in a second direction based on the stored reference vector.*" The Examiner disagrees. Lerzar teaches (col. 3, lines 10-22) a received sequence having N symbols, in a first step calculating and storing all of the branch transition metrics and the forward state metrics. After the N th branch transition metric and N th forward state metric have been calculated, then calculating all N reverse state metrics. Finally, after the reverse state metrics have been calculated, the likelihood ratios are calculated.

Applicant contends, "Lerzar nor Viterbi...teach or suggest *a memory having a long term storage area to store a reference vector of the calculated state metric vectors and a short term storage to store at least some of the re-calculated state metric vectors which are re-calculated from the block of symbols in the predetermined direction based on the stored reference vector.*"

The Examiner would like to point out that these limitations are included in claims 43-49 which

Art Unit: 2133

are objected and rejected under 112 second paragraph and would be allowable over the prior art if amended as stated above.

Claim Rejections - 35 USC § 103

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35

U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims 1, 3-9, 11, 13-19, 21-27, 29-31 and 33 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lerzar (USPN 6343368B1) further in view of Viterbi et al (USPN 5933462).

The Examiner disagrees with the Applicant and maintains all rejections with respect to amended claims 1, 3-9, 11, 15-19, 21-27, 29-31 and 33 and original claims 13-14. All arguments have been considered. It is the Examiner's conclusion that amended claims 1, 3-9, 11, 15-19, 21-27, 29-31 and 33 and original claims 13-14 are not patentably distinct or non-obvious over the prior art of record (see paper No. 5).

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

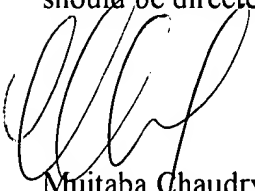
Art Unit: 2133


A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Any inquiries concerning this communication should be directed to the Examiner, Mujtaba Chaudry who may be reached at 703-305-7755. The Examiner may normally be reached Mon – Thur 7:30 am to 4:30 pm and every other Fri 8:00 am to 4:00 pm.

If attempts to reach the Examiner by telephone are unsuccessful, please contact the Examiner's supervisor, Albert DeCady at 703-305-9595. The fax phone number for the organization where this application is assigned is 703-746-7239.

Any inquiry of general nature or relating to the status of this application or proceeding should be directed to the receptionist at 703-305-3900.


Mujtaba Chaudry
Art Unit 2133
May 28, 2003


EMMANUEL L. MOISE
PRIMARY EXAMINER
A/1 2133